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Moulding Box Standardisation

A year or two ago, when in committee at the British Standards Institution, we proposed that consideration should be given to the possibility of standardising moulding boxes. Our colleagues at that time were unanimous in their opinion that such a step would be retrograde. Perhaps, we were too broad in our suggestions, and if we had confined ourselves to moulding-box pins and holes, we might have met with increased support. We return to this subject because of two recent events. The first is that at a meeting of the Slough Section of the Institute of British Foundrymen it was suggested that the question of the standardising of moulding boxes should be reopened. The second was that the French technical Press reports that "the two projects concerning, first, moulding boxes for machine moulding, the second for hand moulding, are finalised, and will be examined at the next meeting of the Technical Commission on Tooling Up and Methods.

The outstanding advantage of standardised moulding boxes, especially in respect to the pins and holes, would, or should, be to raise the general level of the technique throughout the industry. This again would, or should, improve the appearance of the products of the industry by reducing the incidence of heavy joint line markings and the like. Economically, there should be an advantage when purchasing second-hand boxes owing to the increased chance of interchangeability. Now that the foundry equipment industry is undertaking an increasingly important export trade, it is a matter of some moment and urgency that it should co-operate in this work, both at home and abroad, because "standards" have long been an important matter in the international exchange of goods. A conversation with one of the leading moulding machine manufacturers revealed that this lack of standardisation sometimes tended to increase the cost of manufacture.

Nobody is more alive to the fact than we are that the range in sizes of moulding boxes varies between 100 square inches and 100 square feet, that materials used include wood, cast iron, light alloys and steel. Thus the problem of standardisation does superficially appear insuperable. Yet, by taking—as no doubt the French have done—a reasonable range, real progress could quickly be achieved. Especially do we insist that a start should be made with those used on moulding machines. We do not believe that dimensional standardisation—as a preliminary—would discourage inventiveness by the individual. This may well be encouraged when basic factors are known. Moreover, it would not be obligatory for firms to use standardised boxes, and in some cases it would not be reasonable to expect such a development. Yet we are convinced that, by and large, the provision of moulding boxes to an approved standard would be of lasting value to our industry.

During the war, much good resulted from the use of standardised moulding boxes, correlated with the machines, in connection with the mass production of tank track-links which were made in about eight foundries. Most repetition foundries try to confine their activities to a limited range. By assembling this sort of data in collaboration with the moulding machine makers, it should be possible to produce a committee report upon which the British Standards Institution could act. It should be borne in mind that the Institution does not as a rule take the initiative in such matters, but relies on makers and users to co-operate with it in the production of a specification. The time for action is ripe, the organisations for implication exist, and it now remains for somebody to "open the bowling."

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American Foundrymen's Association

Mr. William B. Wallis, president of Pittsburgh (Pa.) Lectromelt Furnace Corporation, has been nominated president of the American Foundrymen's Association for 1948-49. Mr. Edwin W. Horlebein, president of Gibson & Kirk Company, Baltimore, is to be vice-president.

On his retirement as president, Mr. Max Kuniansky will serve one year as a director, succeeding Mr. Sheldon V. Wood, president-general manager of Minneapolis Electric Steel Castings Company, immediate past-president of the association.

Mr. Thomas H. Benners, Jr., managing partner in T. H. Benners & Company, Birmingham, Ala.; Mr. Norman J. Dunbeck, vice-president of Eastern Clay Products, Inc., Jackson, Ohio; Mr. Andrew M. Fulton, vice-president of Northern Malleable Iron Company, Saint Paul, Minn.; Mr. Robert R. Gregg, foundry manager of Reliance Regulator Company, Alhambra, Calif., and Mr. Victor E. Zang, vice-president of Unitcast Corporation, Toledo, Ohio, are to be directors for the next three years.

The American Foundrymen's Association will confer gold medals in recognition of personal contributions to the advancement of the castings industry upon three outstanding foundrymen, and honorary membership upon its retiring international president at the 1948 Foundry Congress and Exhibition to be held in Philadelphia from May 3 to 7.

Mr. Egbert H. Ballard, of Swampscott, Mass., will be presented with the William H. McFadden gold medal; Mr. R. G. McElwee, iron foundry division manager for Vanadium Corporation of America, Detroit, the John A. Penton medal, and Mr. Peter E. Rentschler, president-treasurer of Hamilton (Ohio), Foundry & Machine Company, the Peter L. Simpson medal. The retiring president, Mr. Max Kuniansky, is to be enrolled as an honorary member. The awards will be presented at the annual banquet of the A.F.A. in Philadelphia on May 7.

SUFFOLK IRON FOUNDRY (1920) LIMITED, of Stowmarket, are reported to have received a contract worth £250,000 from Ford Motors, Limited, of Dagenham, for the provision of lifting gear for Fordson tractors.

THE JOINT IRON COUNCIL announce the appointment of Mr. Kenneth Marshall as Director of the Council. Mr. Marshall, a graduate in economics of the University of Cambridge, served a works' apprenticeship with United Steel Companies, Limited. During the war he was in the Ministry of Supply and served on various committees. He vacates his appointment as Chairman of the Export Assistance Department at the National Union of Manufacturers to take up on February 1 this new position.

WE ACKNOWLEDGE with sincere thanks the receipt of a monthly tear-off wall calendar from the Standard Brass, Iron & Steel Foundries, Limited, of Benoni, South Africa.

Forthcoming Events

(Secretaries are invited to send in notices of meetings, etc., for inclusion in this column.)

FEBRUARY 2.

Cleveland Institution of Engineers

"Some Aspects of Modern Blast Furnace Operation," by R. P. Towndrow, at the Cleveland Scientific and Technical Institute, Corporation Road, Middlesbrough, at 6.30 p.m.

FEBRUARY 4.

Institution of Production Engineers.

Preston Section:—"Factory Management—Now Tools for the New Job." by A. J. Charnock, at Clayton Goodfellow & Company, Limited, Blackburn, at 7.15 p.m.

FEBRUARY 5.

The Institute of Metals.

Birmingham Section:—"Modern Developments in Hardenability Testing," by Dr. W. Steven, at the James Watt Memorial Institute, Great Charles Street, Birmingham, at 6.30 p.m.

FEBRUARY 6.

Manchester Association of Engineers.

"Fuel Efficiency," by A. C. Dunningham, D.Sc., at the Engineers' Club, Manchester, at 6.45 p.m.

FEBRUARY 7.

Institute of British Foundrymen.

Lancashire Branch:—"The Stress Relief of Iron Castings," report by Sub-committee T.S.17 of the Technical Council. At the Engineers' Club, Manchester, at 3 p.m.

West Riding of Yorkshire Branch:—"Training Within Industry for Supervisors," by a Ministry of Labour Regional trainer at the Technical College, Bradford, at 5.30 p.m.

The Founders' Emblem

From time to time, we are shown copies of the "Iron Founders' Emblem." This takes the form of a picture surmounting a key to the significance of the numbered items illustrated. Of these, those of major interest today are numbers 9, 10 and 11. They show respectively the blast furnaces at Oak Farm, near Dudley; the foundry of Mare & Company, Bow Creek, Blackwall, London; and the foundry of Bradley & Nevins, Guildford Street, Southwark. The emblem was issued by the Iron Moulders' Society as a certificate of membership in 1854. We are indebted to Mr. J. Gardner, the secretary of the Amalgamated Union of Foundry Workers, not only for supplying the date, but also for sending along a copy of the now rarely seen centenary souvenir booklet of the Friendly Society of Iron Founders, which was published in 1909.

WE EXTEND TO Mr. Pierre Ricard, the president of the *Centre Technique*, who has been promoted to the grade of *Officier de la Légion d'honneur*, the congratulations of the British foundry industry. The French foundry industry is indeed fortunate in having such a brilliant personality for its chief executive.

WE SINCERELY REGRET that, owing to a printer's error, the name of Mr. F. A. Martin, representing the British Steel Founders' Association, of which organisation he is the president, was omitted from our report of the meeting which took place at Derby. The account appeared on page 80 of our last issue.

★ Moulding Boxes* ★

By John B. Morton

Particularly describes the making of large Cast-Iron Boxes by the building up of standardised sections

Introduction

In the present-day production drive of the foundry industry, much is written, discussed and argued about many and varied problems, resulting in a high standard of ingenuity in technical developments in practically all branches, but one finds little evidence of thought given to the basic item of plant in most foundries—the moulding box.

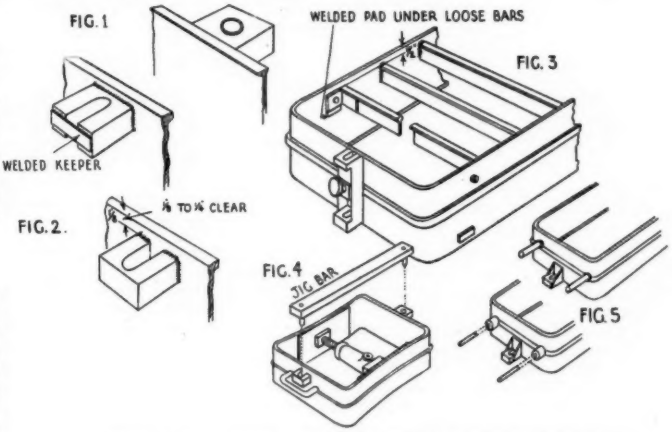
Although often considered a necessary evil, the lack of them or, more commonly, their bad design and lack of standardisation can cause a serious bottleneck. The jobbing foundry, with or without mechanisation, unlike a specialised layout where boxes are designed around the standard products, has to maintain sufficient quantity and size range of boxes to cover a vast variation of jobs.

Fabricated Mild-steel Boxes

Moulding boxes are constructed mainly by casting in iron or steel, or by welded fabrication from mild steel rolled sheet. The latter method is gradually superseding the casting of boxes, especially in the small to medium sizes, where lightness of weight and durability are definitely an asset in favour of fabrication. Types and designs on the market are many, and vary from small lightly built sizes to large heavily reinforced types, and most manufacturers have standard rules for general design which suit most purposes, but a few points are worthy of note.

Locations.—The most trouble-free are centre-line locations with a round bushed hole at one end and a slot at the other, with identical cope and drag for use with loose pins for moulding and closing. The loose pin, shown in Fig. 1, prevents the usual tendency of fixed pins in drags to become bent, rusty or damaged, causing inaccuracy or sticking. The cope and drag being identical, there is no need for pairing, and this can save time in stacking the boxes near moulding machines.

The slotted snug is to take up any deformation of the box due to knocking out or drying-stove stresses. To prevent spreading or widening of the slot, it is advisable to have a small keeper welded across the end, or alternatively have the snug reversed and welded in position, as is shown in Fig. 2.



FIGS. 1-5.—FABRICATED MILD-STEEL MOULDING BOXES.

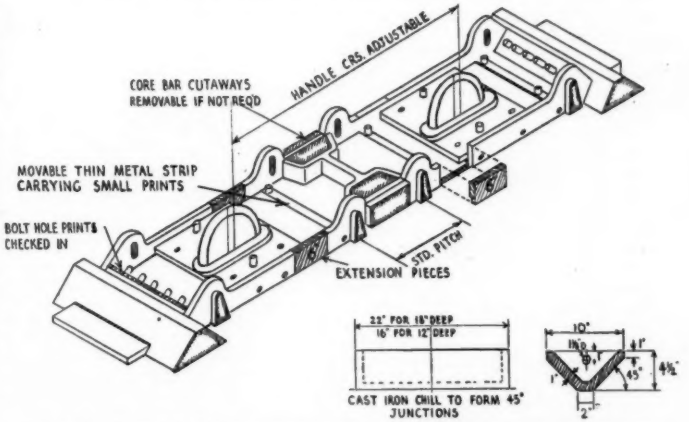


FIG. 6.—PATTERN CONSTRUCTION FOR CAST-IRON MOULDING BOX SECTION.

*Joint Winning Entry for a Competition organised by the Scottish Branch of the Institute of British Foundrymen.

Moulding Boxes

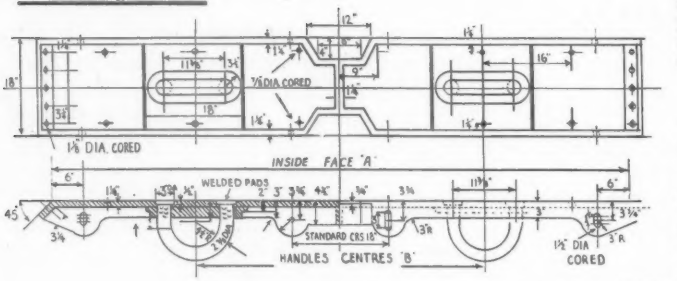


FIG. 7.—PATTERN DRAWINGS FOR TYPE "A" CAST-IRON SECTIONS.

As box-pin centres tend to grow due to box sides coming in, maximum allowance in the slot should be to the inside. If boxes, especially smaller sizes, become distorted beyond even slot capacity, it is quite a good notion to use an ordinary bottle-type car jack to push out the bent sides, a suitable jig being made to check the pin centres (Fig. 4).

Handles.—For one-man boxes, the bow-type handle is very convenient; for two-men boxes, the straight tube or bar hand grips welded to corners or loosely fitting into bosses at corners are suggested (Fig. 5). For crane boxes the trunnions should be welded to narrow ends of rectangular boxes to reduce tendency of "box-giving" when lifted. It is also an advantage for turning the box over on the crane yolk to have trunnions positioned as near centre of balance as possible, taking into account the average pattern volume and distribution of the weight.

Bars.—Bars on fabricated boxes should be welded about ¼ in. below the face to prevent the hangers fouling, and thereby causing their misplacement and subsequent breaking of the mould, when the box is turned over on to board, conveyor, or floor. "T" shape cross-section bars are stronger and suit jolt ramming. Fig. 3 shows a method of fixing loose bars, the single bolt fastening being at each end, thus allowing the bar to be easily reversed. This often comes in useful for avoiding a downgate or riser, as the welded pad under the bar keeps it in place during jolting, even when bolts become slack. Unless the box is specially reinforced for using a midpart, it is not advisable to have all the bars loose. At least two, depending on box size, should be welded in place, especially on or near the centre of the box.

Cast-iron Boxes

Some time ago the foundry with which the Author is associated was faced with a large programme for making cast-iron evaporators, with the usual ultimatum on delivery dates. Confronted with the perennial problem of insufficient boxes to deal with the situation, a fast and economical method of making boxes was required. The two box sizes chiefly required were 11 ft. by 7 ft. and 9 ft. square, with at least a dozen parts each of 18 in. and 12 in. deep. The time and expense needed to make one-piece boxes being out of the question, a sectional built-up design was chosen, bearing in mind the faults of sectional boxes, such as:—(*a*) Badly fitting junctions, (*b*) slack bolts, (*c*) uneven joints, and (*d*) the danger of their twisting when handled.

Another factor was the possibility of an expensive stack of boxes being idle and taking up yard space when the programme was completed. With standardisation in mind, the following basic rules were adhered to:—(1) Patterns to be kept to a minimum; (2) speed was a primary consideration; (3) elimination of machining when possible; (4) interchangeability of parts, in order to make up various sizes of boxes and allow of the replacing of a broken section, and (5) sectional bar grids for the copes and drags to be, as far as possible, suitable for various box sizes.

Patterns.—After standardising depths to 12 in. and 18 in., four patterns were constructed to the general design shown in Fig. 6. Two patterns of type A, one at

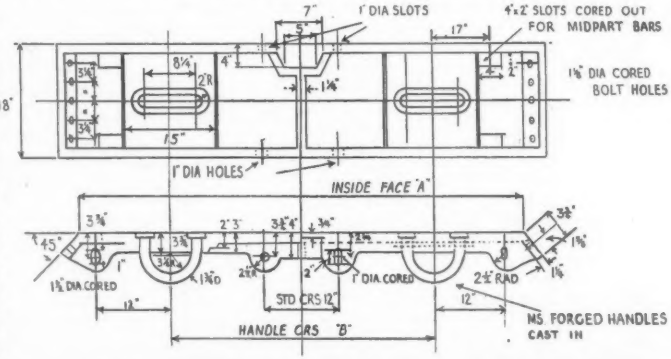


FIG. 8.—PATTERN DRAWINGS FOR TYPE "B" CAST-IRON SECTIONS.

12 in. and one at 18 in. deep, cover the range of sizes listed on Fig. 7. A further two patterns, of type B, also for 12 in. and 18 in. deep, are shown in Fig. 8. These permitted a range of boxes to be constructed from 4 ft. to 11 ft. in steps of 1 ft. The side and end flanges and 45 deg. angle prints were arranged to slide along a central board to allow the fitting of extension pieces. Handle prints were also adjustable and small core prints for hanger brackets, etc., were fixed to thin metal strips adjustable to any pitch. Without undue weakening of the casting, outlets for loam core bars, large core vents or provision for end pouring could be made. If not required, the centre ribs and core-prints could be removed and the location snugs bridged together. The 45 deg. angle junctions were formed by cast-iron chills, precision machined. These were placed in the mould using a spirit-level, the bolt-hole prints butting against them. By lightly furrowing the machined faces of these chills by grinding (inset in Fig. 9), a more rigid joint was formed when the castings were subsequently bolted together. For lighter section cast-iron boxes, it would be advisable to use oil-sand cores instead of chills to prevent the tendency of the casting to crack; these are shown in Fig. 12.

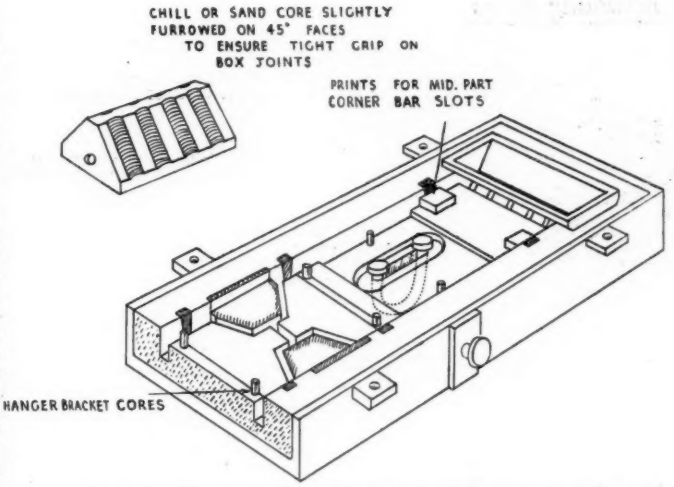

CHILL OR SAND CORE SLIGHTLY FURROWED ON 45° FACES TO ENSURE TIGHT GRIP ON BOX JOINTS
PRINTS FOR MID. PART CORNER BAR SLOTS
HANGER BRACKET CORES

FIG. 9.—SECTION OF A BOX-PART MOULD READY FOR CASTING.

The moulding was straightforward, the box sections being moulded in a suitable long narrow box. Fig. 9 shows a part section of a mould ready for casting, with the handles bedded-in and the remainder of the print rammed up with sand. The only precaution necessary when casting was to withdraw the chills as soon as metal solidified to prevent their getting roasted and their surfaces spoiled.

Handles.—Forged from mild-steel bar, handles were of a design to allow of the crane hook being threaded through (a point often forgotten); also, about 1 in. of parallel section was arranged before the radius to prevent crane hooks from jumping round the handle when parting a box.

Grid Bars.—Fig. 10 shows typical examples of the sectional cast-iron grid bars for completing the copes and drags, standardised as much as possible to allow maximum interchangeability between various lengths of boxes. The grids were secured to the cored flange snugs by fishplates. An example of an assembled box in Fig. 11 illustrates the main features, which are:—

Pin Locations.—Using the pin and slot principle, the sections are built up with slots uppermost at one end and round holes at the other; for hand moulding, loose pins are used and the box is marked before parting. For pattern-plate work, the pin locations

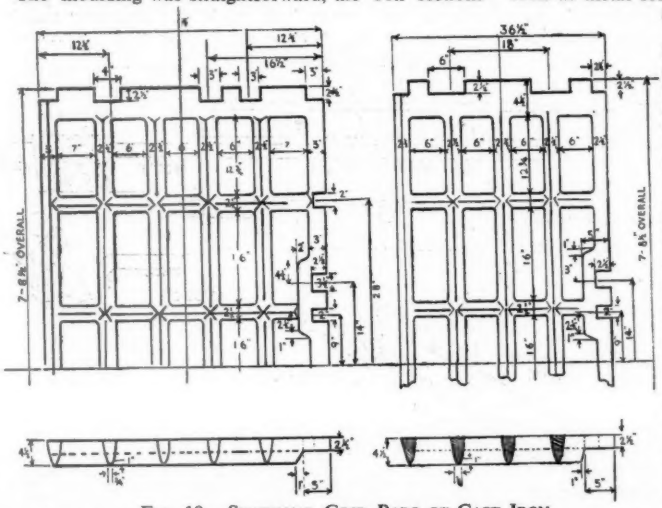


FIG. 10.—SECTIONAL GRID BARS OF CAST IRON.

Moulding Boxes

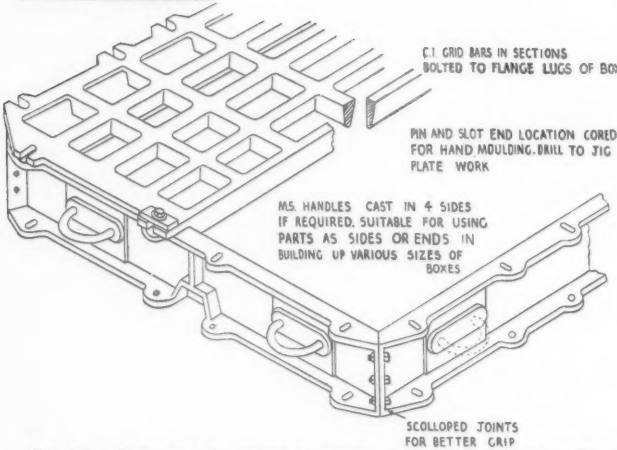

C.I. GRID BARS IN SECTIONS BOLTED TO FLANGE LUGS OF BOXES
PIN AND SLOT END LOCATION CORED HOLES FOR HAND MOULDING. DRILL TO JIG FOR PATT. PLATE WORK
M.S. HANDLES CAST IN 4 SIDES IF REQUIRED, SUITABLE FOR USING PARTS AS SIDES OR ENDS IN BUILDING UP VARIOUS SIZES OF BOXES
SCOLLOPED JOINTS FOR BETTER GRIP

FIG. 11.—CAST-IRON BOX-PART ASSEMBLED WITH GRID BARS IN POSITION.

require to be jig drilled. Handles can be omitted from the end-plates, if they are liable to take up too much stove room, but from the point of view of interchangeability it is an asset to leave them on all sides.

Retention of Sand in Midparts.—Where the pattern covers most of the area of a midpart, three methods, illustrated in Fig. 15, are used to reinforce the sand. They are:—(1) Cored slots to allow jamming of bars across corners to support bars passing round the inside of the box. Hangers are supported by these bars, as shown at A, Fig. 15. (2) Vertical lugs cast on the section, shown at B. (3) Cast-iron or, preferably, steel hanger brackets (detailed in Fig. 16) bolted to the sides of the box for supporting hangers and bars passing through the slots. This method is pictured at D in Fig. 15.

Within about seven or eight weeks from commencing the design, the first large mould was rammed up in these sectional boxes and a programme was started to equip the foundry with boxes of various, yet standard interchangeable sizes, for use both for Sandslinger practice and hand moulding.

Sectional boxes for use on jolt machines are accepted as being inadvisable, but, again, sheer necessity led to the use of the design shown in Figs. 13 and 14. Although seemingly elaborate, the carefully-thought-out ribbing allowed reduction of metal section to ¼ in., thus creating a valuable saving in weight. The midparts were accurately machined top and bottom, and the copes and drags faced on one side only. Centre-line locations were jig drilled (after box assembly, of course) and a round bush was fitted to one end and a slotted bush at the other. The bars in the copes and drags were either a complete one-piece grid bolted to the flange snugs, or a series of bar sections (inset of Fig. 14) bolted to the cored holes inside the plates. The system of using two bolts at one end and one at the other ensured remarkable rigidity.

Accuracy of Locations. — This accuracy cannot be over-emphasised, especially in machine work where copes and drags are turned out off the same or separate pattern plates. It must be remembered that jig drilled pin locations on a pattern plate maintain their pitch; not so the moulding box, as pitch distortion can be caused by warping in the stove or a crack and its subsequent patching on the side or end of the box. With the usual tolerance between the location pins and holes in the region of 0.005 in. to 0.007 in., it needs very little error to cause incorrect fit between the box and pattern plate.

Centre-line Locations.—By pivoting the centre line of a box (Fig. 20) on the centre line of a pattern plate by a pin and round hole at A, the box may swing round on an arc, but the centre line of the box can

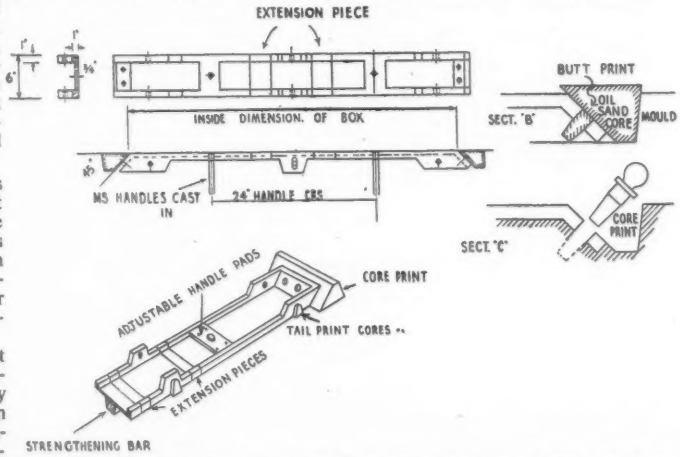


FIG. 12.—LIGHTWEIGHT TYPE OF CAST-IRON SECTIONAL MOULDING BOX.

be anchored to a pin, B, at a fixed position on the pattern plate. If the anchoring point on the box is in the form of a slot of similar width to the pin diameter, accuracy of register is still maintained even if the box be distorted, depending, of course, on the length of the slot. The only precaution necessary with these pin-hole and slot locations is that copes and drags must be moulded to allow the closing of pin-hole to pin-hole and slot to slot, otherwise mis-matching will occur (Fig. 17). Hardened steel bushes are arranged for box-pin locations, one with a round hole and the other a slot, as shown in Fig. 18.

Although centre-line location was recognised as the best method, there was the legacy of the past to be dealt with; that was, the 4-snug boxes which were still much in use. After a great deal of thought and experimenting, a method was devised to maintain accuracy with boxes out of pitch due to patching or stoving stresses. Such boxes were invariably located by two pins on the diagonal, so the arrangement of fitting a slotted bush at one end of the diagonal was the answer (Fig. 19). The same effects and benefits of centre-line location applied in this case also, insomuch that many patched (although still serviceable) boxes were brought back into use.

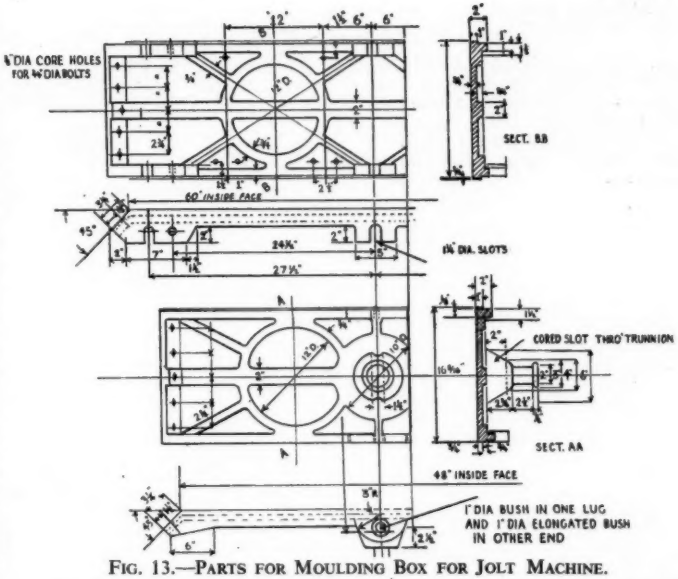

DIA CORE HOLES FOR DIA BOLTS
SECT. BB
60" INSIDE FACE
DIA. SLOTS
CORED SLOT THRO' TRUNNION
SECT. AA
48" INSIDE FACE
1" DIA BUSH IN ONE LUG AND 1" DIA ELONGATED BUSH IN OTHER END

FIG. 13.—PARTS FOR MOULDING BOX FOR JOLT MACHINE.

However, like all good things, there was a snag, although it, fortunately, could be countered by working to a definite procedure. Where one pattern plate was in use, location pins were changed over to the opposite diagonal between the moulding of the cope and the drag; otherwise any error in the box centres, even with slots, would have been doubled when the box was closed. If separate cope and drag plates be used, then the pins can be fitted permanently to opposite diagonals on the plates, obviating the possibility of the human error of forgetting to reverse the pins. In this case also it is important to mould copes and drags so as to close pin-hole to pin-hole and slot to slot.

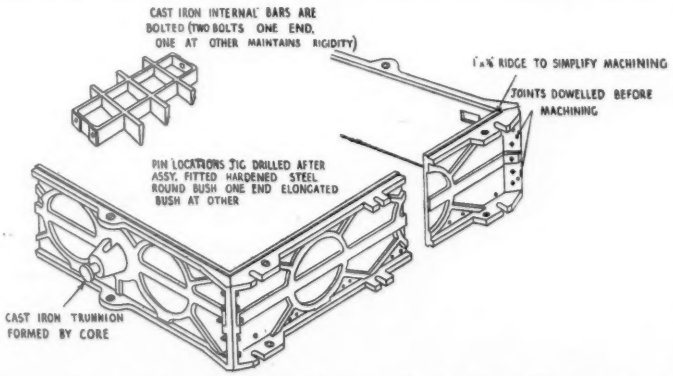

CAST IRON INTERNAL BARS ARE BOLTED (TWO BOLTS ONE END, ONE AT OTHER MAINTAINS RIGIDITY)
RIDGE TO SIMPLIFY MACHINING
JOINTS DOWELLED BEFORE MACHINING
PIN LOCATIONS JIG DRILLED AFTER ASSY. FITTED HARDENED STEEL ROUND BUSH ONE END ELONGATED BUSH AT OTHER
CAST IRON TRUNNION FORMED BY CORE

FIG. 14.—PART-ASSEMBLED MOULDING BOX FOR JOLT MACHINES.

Conclusion

While much can be done in the careful design of cast-iron or cast steel moulding boxes, the qualities of fabricated mild-steel types—mainly durability, accuracy and, above all, lightness of weight—are obviously superior, but, unfortunately, poor deliveries from makers, due to material shortage, leaves little alternative but cast-iron boxes.

In the endeavour to survey the various features relating to moulding boxes, the examples described and illustrated in no way cover the vast field of requirements for various foundries. They have proved successful in the Author's shop, which has a mechanised plant of

Moulding Boxes

jolt machines, besides a jobbing floor utilising Sandslingers, and where it is often desirable to mould on separate plates for cope and drag in order to keep the height of the mould within Sandslinger capacity.

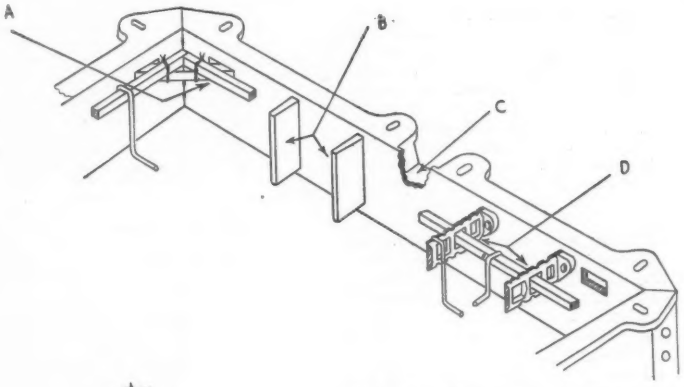


FIG. 15.—METHODS FOR SUPPORTING SAND IN A MID-PART BOX.
(A) Cored-out slots; (B) Vertical Lugs; (C) Hole for Core Bar; (D) Bolted-on Hanger Brackets.

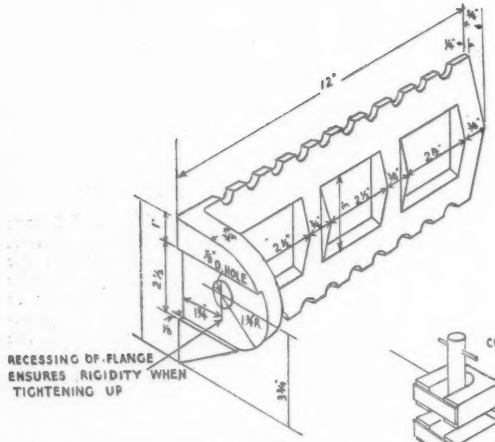
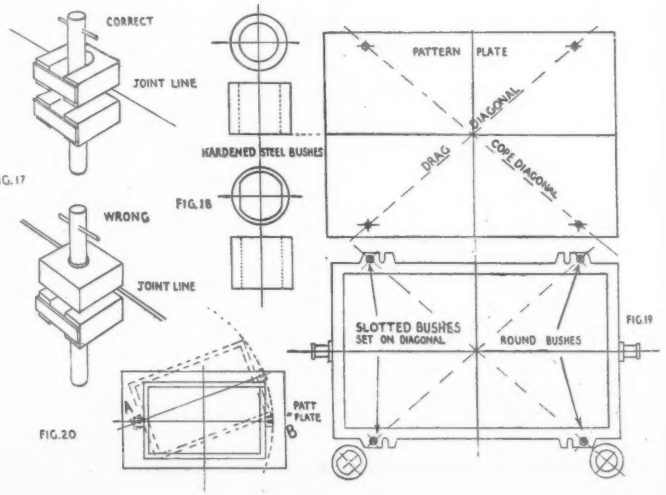


FIG. 16.—DETAILS OF HANGER BRACKET.



FIGS. 17-20.—METHODS OF BOX-PIN LOCATION.

Mechanisation of Non-ferrous Foundries*

London Branch Discussion reveals deep interest in the types of equipment

By G. Skript

DISCUSSION

The CHAIRMAN (Mr. E. M. Currie) said Mr. Skript had dealt fairly thoroughly with the vexed question of whether to mechanise or not to mechanise. The technical man would no doubt debate his recommendation that one sand would meet all purposes. He had discussed the layout and equipment of the core-shop, and the chairman was particularly interested in the idea of a heated core storage oven. His recommendations on the use and comparative values of the electric furnace, the rotating Ellipsoid furnace and even the despised cupola should give plenty of scope for the discussion.

The crucial point about the proposed mechanised foundry lay, of course, in material and metal transport and in the proper arrangement of flow lines; and he invited comments on the merits and drawbacks of the sand-preparation system described by Mr. Skript.

MR. ROSE asked if Mr. Skript had experienced trouble arising from the mixing of the core sand with the moulding sand at the knock-out. Were the cores knocked out fully in the knock-out, or were they partially cleared before stripping?

MR. SKRIPT replied that some foundries tried to segregate the core sand from the moulding sand, but the latest practice in America, and he believed it was also the practice in this country, was not to do so, because the core sands consisted of fines and ordinary silica sand; the fines would be taken out by the de-silter, and the silica sand, with the addition of bentonite, became the ordinary moulding sand. But quite a lot of the hard lumps would be taken out by the screen and would not get back into the system at all.

Core-making Methods

MR. B. LEVY commented that there was little reference in the Paper to the production of cores. At his own works, he said, they had manufactured early in 1947 some coreboxes which were designed to produce cores on a moulding machine; he asked if Mr. Skript had had experience of that sort of core production and, if so, what were his reactions.

MR. SKRIPT replied that he had no personal experience of making cores on moulding machines, but he had seen a good deal of that type of core-making. Ordinary jolt turnover machines were used for core production, and also machines which did not actually produce cores, but which just turned over and lifted. He believed one of those machines was made in this country, with conveyors, for dealing with fairly large cores. One could produce quite considerable sizes of cores nowadays on a blower, and he believed that that method was quicker.

Cutting-off Wheels

MR. ROSE said he had noticed that over the cutting-off wheel there was a screen, which presumably hinged down as far as the operator's arm or wrist. It was a very interesting gadget, and he asked whether it was made of safety glass and whether it was very effective when a wheel broke.

MR. SKRIPT replied that it was made of Triplex glass, and it was effective, but as an extra precaution the operator wore an armoured apron. Perhaps he had been fortunate, but in the course of 15 years' experience of that machine he had never known a serious accident with it.

The Cartridge Blower

MR. P. D. PINCOTT, asking for more details of the cartridge type of core blower, said that in the American technical Press one often encountered lengthy articles dealing with that type of core blower, yet no details were given of how it operated. He asked just what was the cartridge. With regard to the moulding sand, he assumed, from the general spread of the grain sizes, that it was initially of the natural bonded variety. But he would like to know definitely what the sand was to start with, if the information were not confidential. Finally, discussing the moulding machines, he asked whether the machines worked singly or in pairs.

MR. SKRIPT said that he personally had not had experience of the cartridge blower, but he had seen it operated, and it was very simple. The "cartridge" was really in the form of a tube, and there were various sizes of tubes, depending on the volumes of the cores. The operator filled the tube with sand, put it on the blower, pressed the lever, and the core was blown. With experience one could bring the blower to the core or clamp it automatically and just squeeze the core in. The action was different from that of an ordinary core blower. He believed one of the core blowers manufactured in this country was of the cartridge type, although it was not quite the same as the one he had described; it was not a bench machine.

The moulding sand used was ordinary Mansfield sand. Its grain size, clay content and moisture content rendered it suitable for his purpose. There were various grades of Mansfield sand, and various grain sizes, and their mixture gave the properties detailed in the Paper. He would not be surprised to learn that a moulding sand of that type could be made wholly synthetically, without any Mansfield sand; but he used

*Paper presented to the London Branch of the Institute of British Foundrymen and printed in the JOURNAL, January 15.

Mechanisation of Non-ferrous Foundries

Mansfield sand, which not only gave good results but maintained them.

As to the operation of the moulding machines, he said that where there were two pattern plates for one mould it was frequently advisable to operate two machines jointly; but if the mould were made as a matchplate there was no point in doing that, and one could do the job on one machine. It depended on the lay-out of the job.

A SPEAKER elaborated the references to the cartridge type of core blower. A model was made in this country, he said, and was a horizontal machine. The plate against which the core box was placed was backed by a drum revolving on a horizontal plate. The backing plate had in it a number of holes. The cartridge, in the form of a tube, came forward through the sand in the drum, it located itself against a hole in the backing plate, and by the application of compressed air at the back of the cartridge the sand was blown into the box. When the cartridge was taken out of the drum, the latter was revolved, presenting fresh sand for the cartridge to pass through.

Laboratory Control

MR. T. HENRY TURNER, M.Sc., asked if the mechanisation of a non-ferrous foundry was possible without a good laboratory. He appreciated that in Mr. Skript's practice there was regular laboratory control, and perhaps Mr. Skript had not discussed the matter because he had assumed that the managements of all non-ferrous foundries would think alike; but that was not so, and it would be interesting to have his views.

MR. SKRIPT said that he often omitted to mention the laboratory at his foundry because its importance was so obvious. The laboratory was an essential in any foundry, of course, and in a mechanised foundry a very strict control of sand and moulding conditions was essential. In an ordinary foundry there were still quite a few capable craftsmen who mixed their own sand and could tell by the feel whether the sand was satisfactory, and by other tests they knew whether or not the metal was right; but in a mechanised plant, where much unskilled and semi-skilled labour was employed, the control must be much more rigid.

The Case of the Small Foundry

MR. E. J. WILLIAMS asked if Mr. Skript would recommend an ordinary jobbing brass foundry to adopt mechanisation. It would be a comparatively new development and it might take a good many years to appreciate and deal with all the many snags which developed in a mechanised plant. In that connection Mr. Williams emphasised the necessity of appointing a really good engineer, although that matter was not referred to in the Paper.

Foundry in a Nissen Hut

MR. SKRIPT said he had pointed out that mechanisation was not merely a combination of labour-saving gadgets, but was a system. How far one mechanised a foundry depended on the manufacturing programme, the amount of money one could spare, and so on. Much could be done with just a little plant, provided one ensured that there was good "housekeeping" and a proper flow of operations. In one of the American papers he had seen a reference to a foundry which was established in a Nissen hut. There were rails leading to the moulding machines, a pouring station was established, the furnaces were in the right position, and a proper flow of operations was established; it was really a mechanised foundry, although there were not many mechanised gadgets.

Cupola Melting of Brass

In Chicago he had visited a brass foundry where a cupola was used for melting, and the rate of production was particularly high, although the only examples of mechanisation were the power-operated moulding machines and the rail from the cupola to the pouring station. He had been amazed by the large tonnage of small brass castings produced, though he could not quote the exact figures off-hand; the foundry was doing repetition work, but the batches were not very large. Water and gas fittings were being made. Thus, mechanisation, as he understood it, was possible in the smallest units.

MR. W. G. MOCHRIE said the importance of establishing a pouring station had been stressed by Mr. Skript; one was familiar with the importance of the ventilation problem, the elimination of the smoke and fume nuisance, and so on, by the establishment of a central pouring bay. Under proper control the fume nuisance could be eliminated and the condensed fumes made into marketable commodity. There were available reclamation schemes for extracting zinc fumes, etc., conveying them to boxes or hoppers and selling the resulting products, yielding a return which would cover the initial outlay, quite apart from the improved atmosphere.

Recalling Mr. Skrift's reference to the use of a cupola for brass melting in the United States, Mr. Mochrie asked if he had noticed any particular features of the construction of the cupola.

MR. SKRIPT said he could not detect any feature, in the cupola used for brass melting that was different from cupolas used for ferrous melting; and in response to his enquiries he was told that it operated exactly on the same lines as the cupola used for iron; the metal and coke were charged in exactly the same way, and the metal was tapped out into a receiver in the same way as he believed is done sometimes with alloyed iron. The ladles used were of the hand type.

MR. WILLIAMS recalled that at the top of a cupola which was used for non-ferrous melting there was a bag system which took the fumes away and carried them into boxes. From the fumes there was produced a dust containing high percentages of copper and zinc oxides.

MR. S. B. MICHAEL asked for Mr. Skript's general views and experience of the routine side of mechanised founding and all that it involved in the way of docketing, and so on.

MR. SKRIPT commented that that aspect was very wide, and one would require more than one lecture to

be able to deal with it adequately. Generally speaking, however, he emphasised the importance of planning. Perhaps he should have said more about rate fixing, for in a mechanised plant it was more important even than in a hand-operated foundry to know what a job would cost. One must know the time required and the money value, because time was the basis, not only for the payment of wages, but also for the "loading." Various systems were operated. One was described in a very nice booklet published by the Phosphor Bronze Company, distributed through the Association of Bronze and Brass Founders; they used the "Ormig" system. The operating lay-out is made and job and progress tickets are printed, using the former as the master control. One could use any system similar to one operated in the machine shop or any other shop for planning and for the progress of the jobs. It depended on whether one wanted standard costs or job costs. If one wanted standard costs, then 100 per cent. estimation was needed beforehand.

Maintenance

MR. D. CHERRY PATERSON, M.I.Mech.E., said that it was interesting to hear from Mr. Skript that in a large mechanised plant only one maintenance man was required, plus an odd man for a limited number of hours per week. His own experience was that considerable maintenance was required in mechanised plants. He emphasised the point made in the Paper that mechanisation was not merely a collection of mechanical handling units, but was a complete system in itself, involving the proper flow of production. That was an aspect which founders should have very prominently in their minds when considering mechanical handling plants. Very often, when founders wished to mechanise, the first thing they thought about was the installation of a sand conveyor and moulding machines; they did not always think sufficiently about the flow, which involved not only the mechanised side, but also the managerial aspect and the question of metal output.

MR. SKRIPT replied that the information he had given with regard to maintenance staff was provided by the Chief Engineer of his company. The maintenance he had referred to, however, did not include major repairs to the machines. The life of moulding machines was estimated nowadays to be three years, after which period they were sent back to the makers for complete overhaul or were thrown out, yet his company's experience was that plant bought during the war was still operating. Of course, there were minor renewals from time to time of parts such as rubber belts, and so on; but on the whole the number of men he had stated was the number required to ensure the efficient operation of the plant, apart from major breakdowns or the complete overhaul of machines.

Provision of Metal

MR. A. R. PARKES commented that non-ferrous metal melting was usually on the batch production basis. He asked what method Mr. Skript used to allow for the intermittent availability of metal in his production scheme, whether he allowed a bank of moulds to accumulate, waiting for irregular supplies of metal, or whether he arranged some sort of continuous metal supply, using a receiver to which additions of newly melted metal were made from time to time, or whether a battery of melting units was used.

MR. SKRIPT replied that in a mechanised foundry the moulds should not accumulate on the conveyors, because otherwise the conveyer length needed would become almost endless; there must be sufficient room provided for the moulds to cool, and they cooled within a certain time. The conveyors would soon become cluttered up with moulds if one did not cast more or less continuously, and it was good practice to have sufficient furnace capacity and off-set the melting in various ways; one might have one or two teams, depending on the size of the foundry, pouring continuously all the time. The use of receivers was difficult because as a rule the pouring temperature range with non-ferrous metals was so small; unless one used the heated type, such as the bale-out furnace, which was expensive, or something of that sort, it would be difficult to maintain the temperature.

A SPEAKER, who asked Mr. Skript to elaborate on patterns, said that if an iron foundry were adapted for mechanisation it would obviously make a great deal of difference in respect of patterns. Secondly, with regard to Mr. Skript's statement that overhead costs in a mechanised foundry were roughly four to six times more after mechanisation than before, he asked how that fact affected the ultimate cost of the articles produced.

American and U.K. Conditions

MR. SKRIPT, replying to the question concerning costs, said one must admit that the Americans were masters of mechanisation; American wages when he was in that country were roughly two-and-a-half times the British wages, and the costs of products made in the American mechanised foundries were the same as ours. Coke and oil in America were cheaper than here, but all other commodities were definitely not cheaper; transport costs for sand, and so on, were all high. He felt that that was an answer to the question of the costs of mechanised production.

With regard to patterns, he had mentioned in the Paper that a very much larger pattern shop would be required in the mechanised jobbing foundry than in the non-mechanised, and certainly a higher grade of pattern was necessary. Whereas in the ordinary non-mechanised foundry one would leave it to the skilled men to rub a core a little if necessary, or to use callipers to ensure that the wall thickness was satisfactory, and so forth, such work could not be done in a mechanised foundry, for it would involve the loss of too much time. Everything must fit. Metal patterns were called for in the mechanised foundry, of course, but ordinary wooden patterns could still be used for quite large quantities. Metal patterns could be produced from plaster casts, in aluminium and zinc alloy; plaster produced very well-surfaced patterns which did not require a lot of finishing. High-grade

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patterns and a good pattern shop were amongst the most important factors if the success of mechanisation were to be ensured.

The Question of Patterns

MR. LEVY, dealing with Mr. Skript's reference to the damping effect when using plaster or artificial stone patterns, asked to what extent that affected the mould. Asking whether Mr. Skript favoured a metal pattern, he said his own experience was that one could not improve upon a properly machined-up pattern made of brass, gunmetal, aluminium or any suitable metal carrying a controlled machining allowance and dealing with it in tool-room fashion rather than by "rubbing-up" a casting; that was the best way to attain dimensional accuracy.

MR. SKRIPT replied that more jolting was required with wooden or plaster patterns than when one used metal pattern equipment. It was just a matter of experience; no measuring of time was made.

He was fully in sympathy with Mr. Levy in regard to the machining of patterns. If one had to produce 100,000 water fittings it was necessary to make the patterns accurately. Some years ago he had visited a foundry which was making cast-iron fittings, and they were talking there of an accuracy of 0.002 in.; anyone who had seen that foundry would appreciate that such an accuracy was necessary, because the operations were so rapid; yet the finished product was of great accuracy. It was not always possible, however, in a jobbing foundry to go to the expense of making that type of pattern, and there were a number of ways and means of producing patterns fairly accurately. By making an ordinary wooden master pattern and leaving a filing allowance, one could produce a fairly accurate pattern. If one were concerned with the casting of a large range of non-ferrous metals, very often the shrinkage "played tricks," and it was necessary to modify a pattern; so that tool-room methods would not help. One method he had seen in the United States was to produce a complete pattern plate by electrolytically depositing copper on a plaster mould; it was backed up with either a low-melting-point alloy or plaster.

Vote of Thanks

MR. T. HENRY TURNER, M.Sc., proposing a vote of thanks to the lecturer, said he was happy to do so, firstly because he recalled that Mr. Skript had spent many hours showing him around the Langley Alloys foundry a year or two ago, for which he was very grateful. Secondly, because when foundry labour was scarce and maximum production essential, mechanisation became so much more important. Indeed, the Minister of Health (who was responsible for housing), the Minister of Supply, and other such Ministers of the Crown, should really have sent their representatives to the meeting, because mechanisation was obviously now of national importance.

He did not remember having seen a motto displayed in the Langley Works, but he suggested that it would be appropriate for a banner to stretch above the drive leading to Mr. Skript's model foundry bearing the motto "To make the best better." That appeared to be his aim, and that spirit seemed to run throughout his foundry.

A generation ago foundries were dismally dark and dirty, the men were inevitably dirty and they worked in an atmosphere of dust and fumes. In the author's mechanised foundry, however, the windows and floors were clean, the workpeople wore clean overalls, their faces were clean and the products were clean.

DR. A. B. EVEREST, who seconded, also made reference to the pleasant personal contacts he had with Mr. Skript.

(The vote of thanks was carried with acclamation.)

MR. SKRIPT, in a brief response, said he understood that there was a quiet sympathy with the idea of mechanisation. As Mr. Turner had said, it was very important, particularly when one thought about it in terms of labour saving, for the foundry industry was a key industry, and unless it were mechanised it would be in difficulty in the long run by reason of the lack of supply of skilled labour.

Notes from the Branches

London Branch—Slough Section

A well attended meeting held at the Lecture Theatre, High Duty Alloys, Limited, on January 20, with Mr. A. Logan in the chair, took the form of a round-the-table discussion of questions submitted by members.

On the subject of "What constitutes good quality in an Aluminium Alloy?" the opinion of the meeting was summed up from the foundryman's point of view by Mr. E. Raybould (Hon. Secretary) that "castability" was of prime importance. The experience that some alloys, while admirable from the service point of view, were very difficult to cast successfully, was used as a reason why more information on "castability" should be sought. In this connection the opinion was voiced by Mr. F. C. Evans that the metallurgist could not as yet provide all the answers.

To the perennial question as to why a piece of solid cast iron will float on a ladle of molten metal of similar composition Mr. A. R. Parkes suggested it must be because of a difference in specific gravity due, he thought, to phase change between the solid and molten metal.

Considerable support was obtained for the opinion that sizes of moulding boxes, at least for moulding machines and repetition work, should be standardised, particularly in respect of box pins and their locations. This subject was thought of sufficient interest to warrant an approach to the appropriate technical committee of the Institute for its views.

Other questions dealt with were the effect of particle size of coal dust in moulding sand mixtures for iron castings; a request for formulæ for ratios of ingate and runner dimensions for gunmetal and aluminium bronze; what had happened to the Sand-on-tap system of sand distribution, and the reason why the patternmaker's rule was not infallible.

★ Profits Tax up to Date ★ *Interpretation of the 1947 Finance Acts*

By F. J. Tebbutt

The two Finance Acts of 1947 have materially altered the Profits Tax (which was originally the National Defence Contribution); therefore it is proposed to give an explanation, taking the position right up to date. The rate of Profits Tax is now 25 per cent. where profits are distributed to shareholders and 10 per cent. on profits placed to reserve or used in the business, but the tax now only applies to companies; the levy of such tax ended for individuals and partnerships from December 31, 1946.

The first Finance Act, 1947, made the rates 12½ per cent. and 5 per cent. respectively, the Finance Act No. 2 doubled these percentages, and the new rates will apply from December 31, 1946, as the increases are retrospective; the Act provides that, if any assessments have been made at the originally intended rates of 12½ per cent. and 5 per cent., additional assessments will be made to give effect to the new rates. The position, therefore, is that the old provisions (the 5 per cent. companies; other concerns 4 per cent.) apply to profit to December 31, 1946; afterwards the 25 per cent. and 10 per cent. will apply.

New Allowances

The "wear and tear" allowances for machinery and plant apply in a similar manner for Profits Tax, as with Income Tax, as does the special depreciation allowances for buildings, machinery and plant (erected since December 31, 1936), where any such have depreciated in value or are redundant, in consequence of the war ending. The Finance Act, 1947, now allows the deductions of the Income Tax Act, 1945, namely, the "initial allowance," being 20 per cent. of capital expenditure when machinery or plant (new or second hand) is laid down; the "initial allowance" for new industrial buildings being 10 per cent., plus 2 per cent. annually, this applying for both new and under 50-year-old buildings, and the "balancing allowance" given where machinery, etc., is installed, the old being scrapped before the full capital cost of the old has been taken through the other allowances.

What is known as "rehabilitation expenditure" is now allowable for Profits Tax, as with Income Tax, being expenditure on removal of A.R.P. installations; the return of evacuated businesses to the old (or other) location; and the re-adaptation of buildings, machinery or plant for peacetime pursuits. If the work has not been done by December 31, 1947 (and particulars are given the Commissioners before March 31, 1948), until December 31, 1948, may be given for this work and the expenditure allowed for, even until December 31, 1949, if there are special circumstances (*e.g.*, the Government's recent curtailment of capital expenditure may cover these).

Expenditure on Research and Education

Such items as salaries or fees for workers, cost of materials, etc., and of repairs and maintenance, etc., in connection with scientific research, are now deductible as trading expenses for Profits Tax, and also capital expenditure, as, for example, on pilot plants, laboratories, etc., is allowable, but this relief operates by instalments spread over five years.

Expenditure incurred in obtaining a Patent or registering a design or trade mark, and contributions (even of a capital nature) made to a University, College, etc., for technical education relating to the particular trade are allowable as trading expenses.

Useful Assessment Matters

Where the concern is a director-controlled company, deductions for director's remuneration are restricted (presumably so that fictitious sums should not be charged to wipe out profits for tax), so they cannot exceed 15 per cent. of the profits (limited to £15,000, however) computed before the remuneration is deducted, or £2,500, whichever is the greater (until the 1947 Finance Act this £2,500 was £1,500). This rule, however, does not apply in respect of "whole-time service directors," that is, directors who devote practically all their time to the company's service and who do not own (or who are unable to control) more than 5 per cent. of the ordinary share capital.

Investment income (Finance Act, 1947) is now chargeable for tax, except income already taxed (*e.g.*, from companies chargeable to tax themselves); this is called "franked investment income," and, arising from this, the exemption limit may apply in a different way to some firms, so that while profits not exceeding £2,000 are exempt from tax, the taking into account of "franked investment income" will cause the £2,000 limit to be reached earlier. Abatement is still given where profits exceed £2,000, but are under £12,000, the abatement being one-fifth of the difference between the assessed profits and £12,000. As example, take profits of £4,000; the difference to £12,000 is £8,000; one-fifth of that is £1,600 which, taken from the £4,000, means only £2,400 profits apply for tax. Where there is "franked investment income," the calculation of tax is not so simple, but the basis of the formula which applies is still the "one-fifth of the difference" clause.

General

Assessment procedure for Profits Tax follows Income Tax principles, but there are certain differences. Thus, current year's profits apply and not the preceding year's as with Income Tax; annual value, where premises are owned, which is deductible for Income Tax is not deductible for Profits Tax; and while Profits Tax payments are deductible for Income Tax, Income Tax payments cannot be deducted for Profits Tax. Interest, annual payment, etc., are not deductible as trading expenses for Income Tax, but are so treated for Profits Tax.

Correspondence

[We accept no responsibility for the statements made or the opinions expressed by our correspondents.]

ROLLER CONVEYOR FOR FOUNDRY USE

To the Editor of the FOUNDRY TRADE JOURNAL

SIR,—The useful and instructive article in your December issue by Mr. J. Timbrell, regarding a method of making roller conveyors in the foundry, no doubt will appeal to many foundrymen as a desirable method of producing roller conveyors for their own use.

However, some of the statements contained in the article are open to question.

In the first place, no reputable manufacturer of roller conveyor, knowingly, would instal light-type roller conveyor in a foundry. No doubt in the past some light conveyor has proved unworthy and utterly unsuitable for use in the exacting conditions of foundry work. However, investigation of these cases has proved that the fault is nearly always the same. Full details of the loading, and other relevant matter, have not been supplied when the original inquiry has been formulated to the conveyor manufacturer or, alternatively, price has been the main consideration in selecting roller track for this purpose.

The manufacturer can always specify suitable pressed steel type roller conveyor if he is taken into the foundryman's confidence and provided with the full facts concerning box sizes, weights, particulars of bottom boards, and other relevant details.

With reference to your correspondent's complaint concerning long delivery, most foundry-type roller conveyor of the pressed steel type can be delivered in 10 to 12 weeks.

Mass-produced roller conveyor is jig drilled, which ensures the rollers are on a true level line; tubes and bearings also are identical, thus reducing vibration to a minimum. This makes one wonder what effect the cast-iron type of roller conveyor outlined in Mr. Timbrell's article would have upon a moulding box containing a delicate system of cores.

There appear to be two schools of thought on the subject of foundry roller conveyor. On the one hand, there are those who maintain it is cheaper to fit the pressed-steel type ball bearings, and to replace individual rollers if, and when, these become worn. I state "if and when" expressly, as I am employed by one of the largest manufacturers of roller conveyor in this country, having many thousands of feet of roller track in use in foundries for some years, and do know that roller replacements have been infinitesimal.

The other approach is the design of dust- and sand-proof type ball bearing. Whilst this is a worthy ideal, attempts at sealing the roller end by introducing felt washers, lubrication or other methods, all have had a braking effect on the rotation of the roller which, in turn, necessitates pinning of the bearing bush to the spindle. This brake effect considerably increases the gradient required for runs of "poured" and "frozen" boxes on the line to knock out, and demands a greater expenditure of effort to move the boxes along the horizontal portions of the track.

Most foundries, apparently, are content to instal efficient pressed-steel type of track, probably because this type is comparatively inexpensive, and is cheaper in the long run to renew rather than incur the heavy initial outlay of the other types of roller conveyor.

Referring to Fig. 1 in Mr. Timbrell's article, admittedly this may be diagrammatic, but it is essential that all roller conveyors for the foundry are manufactured with the toes of the angle frames turned outwards. This prevents the bottom flange forming a ledge and collecting sand.

Finally, a word to all would-be purchasers of roller conveyor: do please give the maximum information when formulating your inquiry and, better still, ask for a representative who has experience in foundry mechanisation to call and discuss your problems. In this manner the most suitable equipment can be supplied to the mutual advantage of all concerned.—Yours, etc.,

H. W. GREGORY,
Chief Technical Designer and Estimator,
Rownson Drew & Clydesdale, Limited.

January 9, 1948.

RUSTING OF CHILLED GRIT

To the Editor of the FOUNDRY TRADE JOURNAL.

SIR,—As the largest and oldest-established manufacturers of chilled iron shot and grit in the British Empire, we are giving you our views as requested in your issue of January 15, page 50. All bags are sent out perfectly dry and well sheeted, whether sent by road transport or rail. If they are received in the same condition and stored in a dry warehouse, it is impossible for the material to become rusted. Users should realise the importance of examining the bags on arrival to ensure they are perfectly dry, and should avoid storing any of this material where the atmosphere is likely to be damp.—Yours, etc.,

HARRISON BROS. (ENGLAND), LIMITED.

Atlas Foundry,
Commercial Street, Middlesbrough.
January 16, 1948.

THE BIRTH OF PATTERNMAKING

To the Editor of the FOUNDRY TRADE JOURNAL

SIR,—I wish to express my thanks to Mr. Harris for the valuable information he has given regarding the development of patternmaking in the West of England.

It is of interest to know that such comprehensive records are available in an area which is to-day considered non-industrial. If any of your readers have information of a similar nature relating to other parts of the British Isles, I should be obliged if they would kindly forward same to either the FOUNDRY TRADE JOURNAL or the undersigned, to assist in establishing a comparatively accurate account of the early development of the patternmaking craft.—Yours, etc.,

S. A. HORTON.

163, Morley Road,
Chaddesden, Derby.
January 19, 1948.

Book Reviews

How to Prepare and Maintain a Supervisors' Policy Manual. Published as Research Report No. 11, by the American Management Association, 330, West 42nd Street, New York 18, U.S.A. Price $3.

The first question the reviewer asked himself was: What is a Supervisors' Policy Manual? So far as he is aware it is something which does not exist in this country, but apparently it is a book setting out the policy of the board of directors and compiled with the object of setting forth the duties of the supervisors. The second question: Is such a book necessary? This we doubt, as in this country tradition counts for much; wages awards must not be contravened; customs of the trade can only be altered by consultation with the trade unions, and so forth. Yet this book is most refreshing, for it sets out the hundred and one things which are daily brought to the attention of the manager for settlement. Some require an interpretation of agreements, others introduce fresh problems, and it might be an advantage to possess a manual which sets out just what a manager can and can not do. Yet the reviewer dislikes the rigidity implicit in the existence of such a manual. A manager should be allowed to manage his department as near to 100 per cent. as possible within the general policy and traditions of his company. The better the manager the fewer the times he will need to consult the general manager or the board.

So far as this paper-bound 72-page booklet is concerned, the function of the compiler has been to discuss in detail contents, format and editing of such manuals. If any company feels like legislating for the duties of its managers, here is a textbook outlining the procedure.

Aluminium and its Alloys. (2nd Edition.) By N. F. Budger, Ph.D., M.Sc. Published by Sir Isaac Pitman & Sons, Limited, Parker Street, Kingsway, London, W.C.2. Price 25s.

A column—then 11 inches—was devoted by the reviewer when criticising the first edition, which appeared in 1933.* The only adverse criticism then made still persists, and that is the sequence of the chapters. However, but few people except students start at Chapter I and read right through; most people refer to textbooks for chapters of information on some specific subject. Few books can have been subjected to such drastic revision as this one, and probably few subjects warrant it. This has necessitated much amplification and this "small book" has grown from 270 odd pages to about 370, a matter of 37 per cent. There has been an improvement in the choice of illustrations. In the section on "casting" (Chapter IX) it is stated that most moulding boxes are made of aluminium. It may not be true to-day as magnesium boxes seem easier to come by. As an elementary textbook on the whole subject of aluminium from the ore to the finished article of commerce, the reviewer still regards it as the best available.

V. C. F.

*See FOUNDRY TRADE JOURNAL, January 10, 1933, page 64.

Publications Received

Antifriction Metal.—A neat eight-page booklet jacketed in a pleasing blue-green has been received from Murex, Limited, Rainham, Essex. It details the properties of Eel Brand antifriction metal, a type which is hardened by an addition of nickel. It is interesting to learn that this brand has been accepted by Lloyds' for use in the bearings of machinery intended for vessels classed by this concern.

1947 Illustrated. Published by Dorman, Long & Company, Limited, Middlesbrough.

This booklet, which is unusually well illustrated, has been distributed to each of the 27,000 employees of the company. After a note by Lord Greenwood, the chairman, pointing out the interdependence of the employers, employees and customers, the overseas activities are briefly reviewed. Next, in the form of a graph, the shareholders are shown to be, in the main, people having a hundred shares or fewer. This is followed by a tabulation of the distribution of the employees. Data are presented to show the position of the company in relation to national outputs—a surprisingly high percentage. A page is devoted to a subject which has not reached the headlines; by means of graphs the hindrance to production arising from periodic traffic restrictions is shown to have caused excessive stocks being held at the works. From a normal 15,500 tons it rose last February to 50,000 tons. Finally a preview is given of projected extensions and of the work being undertaken by the two main subsidiaries in this country. As a certain class of the community likes to talk about the "sharing of cake," the reviewer suggests that next year the booklet should show diagrammatically what happens to every pound received by the company. The U.S. Steel Corporation do this, and the relative amount going to wages and the shareholders is most striking.

1897-1947. Published by Hobbies, Limited, Dereham, Norfolk.

First, the reviewer congratulates Hobbies, Limited, on the attainment of their jubilee. Born in a jubilee year, 1897, their original output, fret saws, quickly became popular for, by 1900, the reviewer and most of his schoolboy friends were proud possessors of these toys. Now, they have a worldwide reputation. Yet to-day only about half the factory is devoted to fretsaw making, the balance being given over to precision engineering, involving the use of some 1,000 machine tools. In general, the nature of the work undertaken is of a light character; for example, the foundry does not like to cast jobs weighing more than 4 cwt. This, however, does not apply to the saw mills, which reduce huge tree trunks down to thin boards. The souvenir brochure is both well written and excellently illustrated; it stresses the human aspect of factory employment with obvious sincerity and modesty. The canteen and free pension schemes are mentioned without emphasis. The brochure does great credit to the publicity department of this unique enterprise.

Imports and Exports of Iron and Steel

Board of Trade Returns for 1947

The following tables, based on Board of Trade returns, give figures of imports and exports of iron and steel in December and for the whole of 1947. Figures for the whole of 1938 are given for purposes of comparison.

Total Exports of Iron and Steel.

Destination.	December, 1947.	Twelve months ended December.	Whole of 1938.
	Tons.	Tons.	Tons.
Eire	5,744	63,117	55,719
Channel Islands	723	6,977	7,417
Malta and Gozo	259	3,050	2,304
Cyprus	508	3,225	1,656
Palestine	5,204	41,270	8,071
British West Africa	3,314	47,140	49,742
Union of South Africa	15,612	159,832	231,086
Northern Rhodesia	986	8,373	20,574
Southern Rhodesia	4,121	23,629	36,212
British East Africa	3,215	45,173	25,931
British India	6,134	100,808	158,679
Burma	2,136	47,311	18,512
British Malaya	2,404	40,697	66,584
Ceylon	586	12,810	26,030
Hong Kong	2,554	21,994	23,594
Australia	8,480	45,197	170,903
New Zealand	4,081	45,820	131,883
Canada	1,631	17,212	85,409
British West India Islands	2,508	33,414	44,250
Anglo-Egyptian Sudan	616	10,488	8,290
Other British countries	3,376	44,596	17,958
Soviet Union	1	2,544	4,349
Finland	5,324	57,838	17,607
Sweden	7,929	91,744	11,974
Norway	4,719	51,605	20,273
Iceland	172	7,552	658
Denmark	7,682	104,275	87,255
Poland	56	960	2,487
Netherlands	5,795	94,325	51,559
Belgium	832	19,233	20,325
Luxemburg	1	603	103
France	399	19,122	13,387
Switzerland	1,680	17,216	2,781
Portugal	2,681	16,381	7,713
Spain	172	4,823	7,763
Italy	30	5,889	5,139
Greece	300	15,325	1,752
Turkey	1,582	14,035	13,757
Dutch East Indies	1,377	20,567	27,307
Dutch West India Islands	531	10,674	2,464
Belgian Congo	112	1,799	304
Portuguese East Africa	292	5,252	14,220
Syria	59	2,888	2,606
Egypt	2,941	41,641	34,409
Iraq	4,800	65,084	25,740
Iran	9,069	63,483	110,380
China	6,581	64,139	22,509
U.S.A.	287	9,325	2,187
Colombia	337	7,770	3,823
Venezuela	4,381	40,152	4,675
Ecuador	676	5,242	1,592
Peru	442	5,225	3,031
Chile	1,499	11,261	6,293
Brazil	3,567	26,325	16,990
Uruguay	839	11,218	7,587
Argentine	6,294	82,865	79,357
Other foreign countries	5,991	56,572	90,715
Total	163,622	1,877,115	1,915,875

THE BRITISH EXPORT TRADE RESEARCH ORGANISATION starts its third year of full activity on February 1 with work on hand showing an increase of approximately 300 per cent. over the volume of work on hand nine months ago.

Total Imports of Iron and Steel.

From	December, 1947.	Twelve months ended December.	Whole of 1938.
	Tons.	Tons.	Tons.
British India	750	5,517	155,633
Australia	664	46,404	35
Canada	4,076	131,719	117,374
Other British countries	1,456	3,116	5,598
Sweden	1,191	12,195	89,795
Norway	866	23,570	33,774
Belgium	7,104	62,514	273,680
Luxemburg	169	11,617	58,601
France	41	1,398	257,347
U.S.A.	14,494	202,924	200,692
Other foreign countries	1,980	15,940	151,741
Total	32,791	516,914	1,344,270
Iron ore and concentrates—			
Manganiferous	5,720	65,417	62,282
Other sorts	563,558	6,778,131	5,101,867
Iron and steel, scrap and waste, fit only for the recovery of metal	22,231	378,588	632,203

Exports of Iron and Steel by Products

Product.	December, 1947.	Twelve months ended December.	Whole of 1938.
	Tons.	Tons.	Tons.
Pig-iron	22	42,521	93,941
Ferro-alloys, etc.—			
Ferro-tungsten	78	960	517
Spiegeleisen & ferro-manganese	30	9,069	5,197
All other descriptions*	81	791	1,048
Ingots, blooms, billets and slabs	41	3,692	9,743
Iron bars and rods	266	5,712	3,197
Sheet and tinplate bars	—	112	12,380
Wire rods	193	2,777	3,180
Bright steel bars	1,217	25,128	6,589
Other steel bars and rods	9,918	140,441	102,003
Special steel	1,885	18,136	4,933
Angles, shapes and sections	5,423	90,586	66,872
Castings and forgings	254	5,223	1,618
Girders, beams, joists and pillars	1,608	25,544	33,471
Hoop and strip	3,762	40,845	37,377
Plates, ¼ in. thick and over	8,656	131,782	130,959
Black plates	8,209	41,228	14,538
Black sheets	1,634	43,141	63,513
Galvanised sheets	6,391	66,325	146,933
Tinplates	20,006	148,389	319,308
Tinned sheets	413	7,004	1,410
Terneplates	—	495	4,325
Decorated tinplates	138	1,733	4,368
Cast-iron pipes, up to 6-in. dia.	6,217	57,908	48,928
Do., over 6in. dia.	3,578	37,941	42,963
Wrought-iron tubes	24,951	253,858	219,973
Radiators and central-heating boilers	274	4,006	4,028
Railway material	14,778	161,087	158,153
Wire	3,226	45,787	55,181
Cable and rope	2,042	26,985	16,400
Netting, fencing and mesh	1,358	17,277	9,147
Other wire manufactures	499	7,048	3,671
Nails, tacks, etc.	501	7,603	3,806
Rivets and washers	576	8,352	8,536
Wood screws	529	4,598	2,512
Bolts, nuts and metal screws	2,367	22,440	17,573
Stoves, grates, etc. (excl. gas)	967	6,936	7,005
Sanitary cisterns	115	930	2,812
Fencing material	480	6,716	5,130
Anchors, etc.	662	8,850	6,336
Chains, etc.	613	8,795	6,293
Springs	418	5,319	3,931
Hollow-ware	5,230	64,923	10,702
All other manufactures	24,016	267,922	215,105
Total	163,622	1,877,115	1,915,875

* The figures for 1938 are not completely comparable with those for subsequent years.

Scrap Shortage in Western Germany

Effects of Transport Difficulties

The scrap requirements of the iron and steel industry in Western Germany are considerably greater now than they were before the war, owing to works now being entirely dependent on German low-grade iron ores. At the moment, a blast furnace is charged with from 25 to 30 per cent. scrap, compared with 8 to 10 per cent. in pre-war times, and the open-hearth furnace with 80 per cent., compared with 40 to 45 per cent. Though the absolute scrap demand is, of course, comparatively small in view of the reduced iron and steel production amounting to about 20 per cent. of the output in 1938, the supply meets with increasing difficulties.

According to opinion of the official administration boards of the iron and steel industry, the shortage of scrap in 1948 will preclude a regular and sufficient supply to the works. At the moment, the iron and steel works in Western Germany are supplied with about 60,000 to 70,000 metric tons of scrap, while consumption amounts to about 150,000 metric tons. Part of the consumption of from 40,000 to 50,000 metric tons is covered by new scrap or so-called circulating scrap. The deficiency must be made up from stocks still available in the factories. These stocks are, however, falling and amounted only to about 150,000 tons of chargeable material in November, which approximately equals the present monthly consumption.

The scrap shortage prevailing in Germany may seem the more surprising in view of the enormous war damage to industrial plants, vehicles, bridges and other steel structures. There do, of course, exist large masses of scrap, although the amount may easily be overestimated, for many structures or parts of structures, such as blown bridges, are still usable after repairs. In view of the shortage of labour, means of transport, gas, electricity, and so on, the difficulties of collecting, cleaning, sorting and taking scrap to consuming points are almost insurmountable.

During last year the shortage of scrap was further accentuated by the fact that Germany had to fulfil export obligations, particularly to Great Britain, and there will be considerable exports to be implemented also in 1948.

Recent Wills

GYR, K. H., chairman of Landis & Gyr, Limited, manufacturers of electricity meters, etc., of Acton, London, W.3 ... ... £78,468

ANDERTON, ALFRED, managing director of W. R. Anderton & Company, friction clutch specialists, etc., of Castleton, Rochdale £16,065

TAYLOR, E. D., of Loughborough, head of John Taylor & Company, the bellfounders, and who was largely responsible for the introduction of carillons into Britain £205,643

WORK IS IN HAND on the erection of a new platers' shop at Jarrow for the Mercantile Dry Dock Company, Limited.

Broom & Wade's 50th Anniversary

Growth of the Business

This year marks the 50th anniversary of the foundation of the original business of Broom & Wade, Limited, manufacturers of air compressors, pneumatic tools, etc., of High Wycombe, Bucks. The business was established as a partnership by the late Mr. Jethro Wade and Mr. Harry S. Broom, the present chairman. In his address to shareholders circulated with the annual report, Mr. Broom states: "Wade and I decided to commence business together. I understood that Wade had some money, and he thought that I had some. As a matter of fact, Wade's capital consisted of some odd tools and a 6-in. lathe that he had built, and I had a steam indicator and some books and about £20 cash. We went to High Wycombe and bought a piece of land on the p.p., and with the help of an Uxbridge firm found enough material for our first shop, which was 20 ft. wide by 40 ft. long. Wade did the building, while I and our apprentices put in refrigerating plant for the Linde Refrigerator Company. I drew 15s. a week, and Wade and his family 30s. We lived on this for the first few years, working through Bank holidays, and carrying out repairs at the local mills."

Mr. Broom goes on to describe the growth of the business from such a small beginning to its present size.

Mr. E. Hunter Re-elected B.I.S.F. President

Mr. Ellis Hunter has been re-elected as president of the British Iron and Steel Federation for the year 1948. He is deputy chairman and managing director of Dorman, Long & Company, Limited, and succeeded to the presidency on the death of Sir Allan Macdiarmid in August, 1945. He was re-elected for 1947.

Sir James Lithgow, having expressed a wish to resign from the past-presidency, an office which he has held since 1945, Mr. G. H. Latham, president-elect in 1947, has been appointed past-president. Mr. Latham is chairman of the Whitehead Iron & Steel Company, Limited, and a member of the Iron and Steel Board.

Mr. Neville H. Rollason has been appointed president-elect for the year 1948. He is managing director of John Summers & Sons, Limited, and a director of the United Steel Companies, Limited, the Appleby-Frodingham Steel Company, Limited, and other companies. Mr. Rollason is the chairman of the British Steel Producers' Conference and is on the board of B.I.S.C. (Ore), Limited, and the Council of the British Iron and Steel Research Association.

A CAMPAIGN has been started by the Government, through the regional boards for industry, to encourage the development of joint consultation within industrial concerns. It is suggested that the first step should be to stimulate interest in joint consultation machinery among industrialists.

Obituary

MR. ROBERT GARDNER, late of Sir William Arrol & Company, Limited, bridge builders, etc., of Glasgow, died on January 18.

MR. GEORGE FORSHAW, manager of the Inverkeithing depot of Thos. W. Ward, Limited, died in an Edinburgh nursing home on January 17. He was 61.

MR. WILLIAM EDWARD ELLISS, whose death occurred recently, was managing director of William Elliss & Sons, Limited, ironfounders, of Sheffield.

MR. JAMES CHARLES MINTON, who died recently at the age of 70, was chairman and managing director of Charles Harbage, Limited, rolled-metal manufacturers, of Birmingham.

MR. GREGOR GRANT, who died suddenly at Crawley, Sussex, on January 14, was formerly a director of P. & W. Maclellan, Limited, engineers and wagon builders, etc., of Glasgow.

MR. THOMAS WILLIAM GREENWELL, who died on January 19, was chairman and founder of T. W. Greenwell & Company, Limited, ship, engine and boiler repairers, of South Dock, Sunderland. He was 80 years of age.

MR. J. W. HOBSON, general manager of Robert Stephenson & Hawthorns, Limited, locomotive builders, etc., of Newcastle-upon-Tyne, has died at the age of 64. He joined the company 50 years ago and was due to retire shortly.

MR. GEORGE HENRY GREEN, who died recently, entered the service of Adams & Richards, a branch of R. C. Brinton & Company, Limited, iron and steel stockholders, of Birmingham, at their Wednesbury depot. During his 52 years with the company he rose from the position of junior clerk to that of manager. Mr. Green was 67 years of age.

MR. JAMES HENRY DONCASTER, for many years chairman of Daniel Doncaster & Sons, Limited, steelmakers, etc., of Sheffield, has died at the age of 74. He was chairman of the High-speed Steel Association for some years and also president of the Crucible Steel Makers' Association. He was a former chairman of Sheffield Chamber of Commerce. Mr. Doncaster was keenly interested in education and had been a member of the Sheffield Education Committee, treasurer of the University of Sheffield, a member of the Council and Junior Pro-Chancellor. He was a Justice of the Peace.

MR. JOHN SWAIN, chairman of Matthew Swain, Limited, ironfounders and cast-iron hollow-ware manufacturers, of Newton Heath, Manchester, died at Buxton on January 20. He was in his 70th year and had completed 55 years' service with the company, 45 years as chairman. Mr. Swain entered the business at the age of 14, and when he was a young man he travelled abroad on the firm's behalf. His main interest, however, was in the foundries, where his expert knowledge was invaluable, and he took an active and even vigorous part in the management of the firm up to the time of his death.

Belfast Shipyards' Hopes

Sir Roland Nugent, Minister of Commerce for Northern Ireland, has been in consultation with Sir Frederick Rebbeck, chairman of Harland & Wolff, Limited, in connection with the proposed cuts in steel supplies to the shipbuilding industry. He told Sir Frederick that the Government were anxious to take any steps that would assist in keeping a supply of steel to the shipyards. Sir Roland later asked the Senate not to press him as to the steps to be taken at present. "I do not want to raise what may turn out to be false hopes, but we have a strong case to make," he said.

Two points were involved. Though for constitutional reasons Northern Ireland could not be called a development area, it had always been treated as one, and Sir Stafford Cripps had said that development areas would receive special treatment. The second point was that the ships being built in Belfast were to a large extent specialised ships and it was possible that the allocation of steel might be higher in proportion.

Margam Cold-reduction Steel Plant

The Steel Company of Wales, Limited, has announced technical details of the three-stand cold-reduction steel plant, which is to be built at Margam, Port Talbot. The mill, which will have the highest finishing speed and horse-power of any three-stand mill in the world, will require additional buildings alongside the Abbey Works, the large new hot-strip mills now under construction, covering 600,000 sq. ft. and employing approximately 700 men. The hot-reduced coils will be brought from the strip mill to the cold-reduction plant by twin cooling conveyors 1,000 ft. long. The mill will roll coils up to 30,000 lb., up to 72 in. wide and down to 0.026 in. thick, and there will be a maximum finishing speed of 2,000 ft. per min.

Gazette

THE PARTNERSHIP BETWEEN Lionel Wolfe Myers and Miriam Ruth Jacobs, carrying on business as general metal dealers at 137, Bearwood Road, Smethwick, under the style of Myers & Jacobs, has been dissolved.

FRANDOR ENGINEERING COMPANY, LIMITED, is being wound up voluntarily. Mr. W. P. Hatton, National Provincial Bank Chambers, Barnstaple, and Mrs. D. J. Garrett, Mill Vale House, Umberleigh, Devon, are the joint liquidators.

THE PARTNERSHIP BETWEEN John Worsley Tyler and Griffith John Harry, carrying on business as engineers at Lawrence Lane, Old Hill, Staffs, under the style of Microfitments, has been dissolved. Debts will be received and paid by J. W. Tyler, who continues.

THE PARTNERSHIP BETWEEN Arthur Stephen Hall and Ernest Wilson, carrying on business as engineers, under the style of the Wilhall Engineering Company, at Ludford Street, Crewe, has been dissolved. Debts will be received and paid by E. Wilson, who continues.

Personal

SIR ERIC GORE-BROWNE has been appointed a director of the Rio Tinto Company, Limited.

MR. C. H. HEAPE has resigned from the board of the Indian Iron & Steel Company, Limited.

MR. D. VAUGHAN has been appointed an additional director of Revo Electric Company, Limited.

MR. R. E. ELLIS has been appointed general manager of British Polar Engines, Limited, Glasgow.

MR. ALASTAIR C. CROCKATT has been appointed a director of William Crockatt & Sons, Limited, engineers, of Glasgow.

MR. R. P. BEDDOW and MR. W. T. JAMES have been appointed to the board of the British Electric Traction Company, Limited.

MR. H. O. S. BRIDCUTT has been appointed a director of Richard Crittall & Company, Limited, heating and ventilating engineers, of Brentford.

MR. F. A. J. HODGES, general manager of John Readhead & Sons, Limited, shipbuilders and engineers, of South Shields, has left the company.

MR. D. W. BROUGH has resigned from the board of the Metal Box Company, Limited. MR. D. DUCAT has been appointed a director of the company.

MR. R. T. PEMBERTON has been elected to the board of the Superheater Company, Limited, in place of MR. R. S. PORTHAM, who, as reported earlier, has resigned.

MR. J. M. SURRALL, general commercial manager, has been appointed a director of Simplex Electric Company, Limited, a subsidiary of Tube Investments, Limited.

SIR CHARLES S. WRIGHT, who was Director of Scientific Research to the British Admiralty from 1934 to 1947, has been appointed to the British Columbia Research Council.

MR. D. C. HAGEN, who has been appointed chief draughtsman with G. & J. Weir, Limited, engineers and foundrymen, of Cathcart, Glasgow, has been with the company for 36 years.

MR. P. M. PARISH has been appointed chairman of Fry's Metal Foundries, Limited, in succession to MR. JOHN FRY. MR. G. W. GIBSON has been appointed managing director of the company.

SIR CHARLES DARWIN, F.R.S., Director of the National Physical Laboratory, has been appointed a member of the Government's new Colonial Development Corporation. The appointment is on a part-time basis.

MR. L. HARPER, who has retired from the board of Horseley Bridge & Thomas Piggott, Limited, constructional engineers, ironfounders, etc., of Tipton, Staffs, had been associated with the company for 43 years.

THE HON. R. A. BALFOUR, ex-Master Cutler, and son of Lord Riverdale, has left Sheffield for a business tour in Australia on behalf of Arthur Balfour & Company, Limited, steelmakers, etc., of which he is a director.

MR. J. H. B. FORSTER has been appointed chairman, and MR. B. CHETWYND TALBOT deputy-chairman and managing director, of the South Durham Steel & Iron Company, Limited, and the Cargo Fleet Iron Company, Limited.

COL. SIR THOMAS FORTUNE PURVES, a former president of the Institution of Electrical Engineers, and ADMIRAL SIR JOHN HENRY DACRES CUNNINGHAM, First Sea Lord, have been accorded honorary membership of the Institution.

MR. I. A. MARRIOTT, who joined the new board of W. G. Bagnall, Limited, locomotive builders and designers, of Stafford, when it was acquired by Heenan & Froude, Limited, towards the end of last year, has been appointed managing director.

MR. C. F. SAUNDERS has been appointed chief engineer of the welding department of Metropolitan-Vickers Electrical Company, Limited, in succession to MR. H. WEST, who has relinquished this appointment in order to devote full time to his duties as assistant to the chief electrical engineer.

MR. S. A. LANE has joined the board of the Brush Electrical Engineering Company, Limited, and has been appointed general manager. He was formerly managing director of Tarran Industries, Limited, and prior to that a director and general manager of Mirrlees, Bickerton & Day, Limited.

MR. JOHN WILLCOCKS, general secretary of the Ship Constructors' and Shipwrights' Association, of Newcastle-upon-Tyne, is to retire at the end of March. Like his predecessor, Lord Westwood, Mr. Willcocks was also president of the Confederation of Shipbuilding and Engineering Unions.

MR. WILLIAM MCLACHLAN, secretary of the Clyde Alloy Steel Company, Limited, has been appointed a director of the company. MR. ROBERT M. LAWRIE, the company's accountant, is to take on the additional duties of assistant secretary, while MR. STEPHEN L. ROBERTON, chief metallurgist, has been appointed sales manager, with MR. GEORGE CUTHBERTSON as his assistant.

MR. JAMES GOOLD has received a presentation upon his retirement after 55 years' service with Walter Macfarlane & Company, Limited, sanitary and engineering art founders, of Glasgow. Presentations were made during the past year to three other long-service employees upon their retirement: MR. DAVID SHAW (60 years' service), MR. ALEX. ANDERSON (57 years), and MR. JOHN ORR (54 years).

MR. H. BUTTERWORTH, sales manager of the motor and industrial control departments of the Metropolitan-Vickers Electrical Company, Limited, has left the company to take up an executive appointment with Edison Swan Electric Company, Limited. MR. H. BOYD BROWN has been appointed sales manager, motor department, and MR. C. H. DE NORDWALL, sales manager, industrial control department. MR. F. R. MASON will succeed Mr. Brown as principal representative at Trafford Park of the Metropolitan-Vickers Electrical Export Company, Limited.

News in Brief

FIRE BROKE OUT recently at the works of H. R. Marsden, Limited, manufacturers of stone-breaking and ore-crushing machinery, of Leeds. The pattern-shop was destroyed.

BLYTHSWOOD SHIPBUILDING COMPANY, LIMITED, Glasgow, have received an order from Manchester Liners, Limited, for a cargo and passenger turbine steamer of 8,600 tons d.w.

GOLD WATCHES have been presented to 40 long-service workpeople on the staff of Crompton Parkinson, Limited, manufacturing electrical engineers, of Guiseley, near Leeds.

THE CONTROLLING INTEREST in Cooke & Ferguson, Limited, electrical welders and jig manufacturers, of Openshaw, Manchester, has been purchased by Crompton Parkinson, Limited.

RICHARD DUNSTON, LIMITED, Thorne, near Doncaster, has received an order to build 40 petrol tankers, each of 300 tons capacity, as part of a £1,000,000 contract for the French Government.

PRODUCTION AT THE Templeborough Works, Sheffield, of Steel, Peech & Tozer, recently, was the highest on record. The works produced 15,831 ingot tons of steel, compared with 15,483 tons in the previous week and 15,219 tons in February, 1938.

WAGE INCREASES for workers in the Scottish tube industry were agreed upon at a conference in Glasgow last week. Men and women of 21 years of age and over will receive increases of 6s. and 4s. 6d. a week respectively, with proportionate increases for younger workers.

THREE MEMBERS of the staff of Clelands (Successors), Limited, engineers and shiprepairers, etc., of Willington Quay-on-Tyne, who have a combined service of over 150 years with the firm, received presentations from Mr. K. F. Craggs, managing director, at a staff dinner. They are Mr. Stanley Ballback, Mr. William Davidson, and Mr. Frederick Vickers.

THE ENTIRE EQUIPMENT of a German machine-tool factory has been bought complete from the Government by B.S.A. Tools, Limited, and is being moved from Stuttgart to Redditch. It is believed to be the first ex-enemy factory acquired as reparations to be transported to Britain. German designers and technicians, who will become permanent members of the staff of B.S.A. Tools, will come over with the plant. It is stated that by the time the factory starts up at Redditch it will have cost nearly £500,000.

THE FIRST ORDERS received in the North-East for 1948 have been placed by the Athel Line, Limited, R. W. Hawthorn, Leslie & Company, Limited, Hebburn, Joseph L. Thompson & Sons, Limited, Sunderland, and Smith's Dock Company, Limited, North Shields, are each to build one ship for the company. R. W. Hawthorn, Leslie & Company, Limited, will supply the engines for their contract and also for the Thompson order, while the North Eastern Marine Engineering Company (1938), Limited, Wallsend, will engine the Smith's Dock Company's ship.

MR. NORMAN HUNTER, of Swan, Hunter & Wigham Richardson, Limited, shipbuilders, etc., of Wallsend, presiding at the annual dinner in Newcastle-upon-Tyne, of the North-East District of the Industrial Welfare Association, said he would like to see the return of the old family spirit to industry to encourage closer contact between employers, executives and employees. He hoped that employers would extend and support welfare work, and suggested that where firms were too small to engage a full-time welfare supervisor, they might combine to share the services of one.

THE CHAIRMAN OF Spencer (Melksham), Limited, Mr. P. E. Millbourn, states that negotiations between the company and the trustees of the debenture holders to obtain an alteration in the redemption terms of the 5 per cent. mortgage debentures have been successfully concluded. Under the new terms the redemption date is altered from April 1 to October 1 to coincide with the ending of the company's financial year, and the amount to be redeemed annually is now fixed at £2,500, as compared with the much higher rate provided under the previous arrangements. The company carry on the business of manufacturers of elevating, conveying and grain-warehousing machinery, and ironfounders.

Increases of Capital

Details of increased capital have been announced by the following companies:—

Thermic Equipment & Engineering Company, Limited, Dibdale Works, near Dudley, increased by £15,000, in £1 shares, beyond the registered capital of £3,000.

Dacier, Limited, mechanical and electrical engineers, etc., of 22, Bargate, Christchurch, Hants, increased by £10,000, in £1 ordinary shares, beyond the registered capital of £7,500.

Kneeda Manufacturing Company, Limited, engineers and foundrymen, of 134, Lots Road, London, S.W.10, increased by £44,000, in 20,000 5 per cent. non-cumulative preference and 24,000 ordinary shares of £1, beyond the registered capital of £6,000.

Payne & Griffiths, Limited, engineers, etc., of Tudor Works, Windmill Lane, Smethwick, increased by £5,000, in £1 unclassified shares, beyond the registered capital of £20,000.

Thanet Foundry & Engineering Company, Limited, Elm Grove, Westgate-on-Sea, increased by £2,900, in £1 ordinary shares, beyond the registered capital of £100.

Home Counties Engineering Company, Limited, 106A, Church Road, Upper Norwood, London, S.E.19, increased by £5,000, in £1 8 per cent. redeemable preference shares, beyond the registered capital of £5,000.

Barre & Company (London), Limited, manufacturers of machinery, machine tools, etc., of 28, Great Queen Street, London, W.C.2, increased by £1,000 in £1 ordinary shares, beyond the registered capital of £1,000.

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Company News

(Figures for previous year in brackets.)

Vokes—Dividend of 12½% (same).

Duple Motor Bodies—Interim dividend of 7½% (5%).

T. M. Birkett & Sons—Interim dividend of 7½% (5%).

David Brown & Sons (Huddersfield)—Dividend of 10% (5%).

Aberdare Cables of South Africa—Dividend of 2½% for the initial period to June 30, 1947.

Ley's Foundries & Engineering—Net profit for the year ended September 30, 1947, £43,993 (£48,261); final dividend of 5%, making 11% (same); forward, £58,937 (£60,594).

Birfield Industries—Report for the period December 1, 1946, to August 31, 1947, shows income of £89,199 (£95,424); net balance, £76,405 (£91,860); to general reserve, £20,000 (£10,000); dividend of 12½% (same); forward, £87,062 (£77,058).

English Clays Lovering Pochin & Company—Profit for the year ended September 30, 1947, after charging depreciation and taxation, £228,284 (£227,875), including £2,912 (£3,412) tax-free interest on tax certificates transferred to suspense; dividend of 5% (same).

Spencer (Melksham)—Net profit for the year ended September 30, 1947, after tax, depreciation, etc., £19,150 (£18,167); to sinking-fund reserve, £1,667 (£6,750); dividend of 12½% (10%); co-partnership trustees' scheme, nil (£670); forward, £55,566 (£42,814).

Ingall, Parsons, Clive & Company—Net profit for the year ended September 30, 1947, £17,442 (£10,490); to reserve, £10,000 (£5,000); employees' benevolent fund, £1,000 (nil); ordinary dividend of 10% (same) and deferred dividend of 10% (same); forward, £15,339 (£14,652).

Tecalemit—Profit for the year ended July 31, 1947, after taxation and including subsidiary and associated dividends, £114,125 (£120,081); to depreciation, £31,158 (£31,088); patents written down, £3,968 (£2,729); directors' remuneration, £5,000 (same); net profit, £73,999 (£81,264); dividend of 20% on increased capital (20%); forward, £86,298 (£69,324).

J. Samuel White & Company—Trading profit for the year ended September 30, 1947, after depreciation and taxation, £59,537 (£65,050); transfer fees and interest, £2,710 (£212); to directors' fees, £2,300 (£2,425); net profit, £59,947 (£62,837); to general reserve, £25,000 (same); final dividend of 10%, making 15% (same); forward, £40,339 (£33,112).

C. Lindley & Company—Gross trading profit for the year ended September 30, 1947, £104,796 (£55,595); to fees and expenses, £40,995 (£39,182); depreciation, £8,455 (£6,943); pension, £1,303 (£1,185); bad debts, £167 (£400); balance, £53,876 (£7,717); to taxes, £32,750 (£6,370); amortisation, £500 (same); depreciation on buildings, £222 (same); to reserve, £4,000 (nil); final dividend of 20% (15%), making 25% (same); forward, £23,512 (£17,598).

Round Oak Steel Works—Profit for the year ended June 30, 1947, £159,423 (£170,448); provisions made in previous years no longer required, nil (£16,000); interest and dividends, £12,447 (£2,270); to depreciation, £28,772 (£29,456); debenture interest, £14,184 (£14,541); debenture trustees, £184 (same); pension scheme, £3,000 (same); directors' fees, £2,750 (same); net profit, £122,980 (£138,787); tax over-provision, nil (£19,500); to profits tax, £12,000 (£7,700); income tax, £49,500 (£65,700); balance of ordinary dividend 1944-45, nil (£50,000); general reserve, nil (£50,000); dividend of 8% (same); forward, £90,078 (£53,898).

R. A. Lister & Company—Trading profit for the year ended September 30, 1947, £404,762 (£370,683); to depreciation, £52,602 (£38,697); directors' fees, £800 (£850); pensions, £2,600 (£5,948); taxation, £167,488 (£152,760); credit for over-provision of taxation in previous years, £18,584 (nil); credits of previous years arising out of settlement of Government contracts, etc., nil (£102,458); provision for taxation thereon, nil (£98,997); net profit, £199,856 (£175,889); final dividend of 5%, making 10% (same), and bonus of 8% (same); to writing off cost of goodwill in purchase price of a new business, £2,116 (£9,996); forward, £239,094 (£150,254).

New Trade Marks

The following applications to register trade marks appear in the "Trade Marks Journal":—

"FROOD"—Ovens. J. LYONS & COMPANY, LIMITED, Cadby Hall, London, W.14.

"AIRDUN"—Firegrates. ALEXANDER DUNN, 49, Main Street, Uddingston, Lanarkshire.

"DIMPLEX"—Radiators. CUNLIFFE-OWEN AIRCRAFT, LIMITED, Swaythling, Southampton.

"CROLTITE"—Engineers' jigs, etc. CROLT ENGINEERING, LIMITED, Waterloo Street, Bolton.

"TRU-WEL"—Metal tubes. TUBE PRODUCTS, LIMITED, Popes Lane, Dedbury, near Birmingham.

"RAYSTOP"—Clamps. HORACE ALGERNON RAYMAN, 59, Shepherds Hill, Highgate, London, N.6.

"HELLIWELD"—Metal tubing. HELLIWELLS, LIMITED, The Airport, Aldridge Road, Walsall, Staffs.

"HIDURON"—Common metal alloys. LANGLEY ALLOYS, LIMITED, Station Road, Langley, Bucks.

TUBING DEVICE—Metal flexible tubing. COMPOFLEX COMPANY, LIMITED, 14, Dartmouth Street, London, S.W.1.

"ATOMIC"—Spades, shovels, etc. H. G. SMITH (STEEL FABRICATIONS), LIMITED, St. Anne's Road, Willenhall.

"CENTIVECT" and "CENTRAVECT"—Domestic radiators. CUNLIFFE-OWEN AIRCRAFT, LIMITED, Swaythling, Southampton.

"BELDRAY" (DEVICE)—Hollow-ware. BRADLEY & COMPANY, LIMITED, Albion Works, Mount Pleasant, Bilston, Staffs.

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Raw Material Markets

Iron and Steel

The Ministry of Supply has made the Control of Iron and Steel (No. 62) Order, which came into operation yesterday (Wednesday). Under the new Order the maximum prices of most iron and steel products are increased, while the authorisation scheme, hitherto operated by Form M and other documents, is revised. Prices of basic pig-iron and hematite have been increased by 9s. per ton, foundry and forge iron and low-phosphorus foundry iron by 4s. per ton, Scottish foundry iron, cylinder and refined iron, and refined malleable pig-iron by 5s. per ton. The price of cold-blast pig-iron has been increased by 4s. per ton, blast-furnace ferro-manganese by 6s. per ton, and spiegeleisen by 5s. per ton. Other prices which have been increased include the following:—Billets, blooms and slabs for re-rolling, by 5s. per ton; heavy steel bars, sections and plates, by 5s.; heavy rails by 5s.; re-rolled bars, sections and hot-rolled strip, basis increase of 6s.; steel castings by approximately 2.7 per cent. There is no change in the prices of iron castings.

The Minister has also made the Control of Bolts, Nuts, Screws, Screw Studs, Washers and Rivets (No. 15) Order, 1948, which came into force on the same day. Under this Order maximum prices for a limited range of products have been increased.

Raised though it has been to an average rate of 8½ million tons per annum, pig-iron production is estimated to fall 750,000 tons short of requirements. Moreover, the possibility of bridging this deficiency by raiding stocks has become very nearly exhausted. Few of the works have anything like normal reserves of pig-iron, and steelworks' consumption has latterly tended to increase because of the scarcity of scrap. In these circumstances, it is not surprising that the foundries are faring badly. Many of them are on reduced rations and have had to limit their output of castings in consequence. Most badly situated are the foundries which use high-phosphorus iron; the engineering establishments have a wider range of choice, but they, too, are finding it more difficult to obtain full deliveries of hematite, low-phosphorus or refined iron.

Efforts to expand imports of semi-finished steel have not been abandoned, though they have not yet been successful. The economy of the re-rolling trade has been built up on the basis of liberal supplies of cheap foreign material. This is no longer cheap and, moreover, it is very scarce. Thus the industry is now almost wholly dependent on home supplies, and, although British steelmakers have increased their deliveries, shortages are inevitable. Outputs of sheets are totally inadequate and could be increased if more sheet bars were available, while scarcity of small billets similarly restricts the output of small bars, light angles, etc.

There is no indication that the anticipated advances in prices have induced producers to hold up deliveries. On the contrary, they are clearing maximum tonnages and, although P.M.L. categories claim first priority, there is a good deal of scrambling for supplies before the new allocation scheme comes into force in April. Shipbuilders are especially urgent in their calls for plates and angles, and emphatically repudiate Ministerial pronouncements that the threatened 20 per cent. cut in their "ration" will not have a serious effect on the output of new tonnage. There is, however, a national and world-wide shortage of steel, and it is clear that many consumers will have to go short.

Non-ferrous Metals

Following the rise in the United States zinc quotation from 10½ cents to 12 cents, the Ministry of Supply dropped a bombshell on the trade last Saturday in the shape of a notice to the effect that, pending adjustment of their selling price for the metal, no more licences to acquire zinc would be forthcoming. In plain English, the Government—the only source of supply of virgin zinc to consumers in this country—gave notice of withdrawal for an indefinite period, and therefore business in this metal was completely suspended. It is indeed an extraordinary state of affairs and an illuminating commentary upon bulk-purchasing methods. What is particularly exasperating to the industry is the absence of any indication that the authorities realise the disruptive repercussions which are bound to follow such an unconstitutional step. There is, of course, no guarantee that similar action will not be taken in the case of the other metals. After all, it happened once before with lead, and only recently users of tin were put on a ration. Surely it is high time that steps were taken to dispose of a system which breaks down from time to time so disastrously.

Copper statistics have become available since our last notes, those for the United Kingdom, issued by the British Non-ferrous Metals Federation, showing that the December consumption of virgin at 27,439 tons was nearly 5,000 tons down on November. In scrap, however, the position was reversed, for the December figure, given as 18,111 tons, was fully 3,000 tons better than the corresponding total for November. So ends a year which began badly, but improved as the months went by, until in the end the final picture disclosed shows that usage of virgin copper averaged about 29,000 tons a month and secondary about 16,000 tons. It remains to be seen whether 1948 can live up to such a standard. Figures from the United States for December also conclude a year of remarkable consumption, for deliveries to domestic consumers totalled no less than 1,383,666 short tons. In December, blister production amounted to 80,593 short tons, an increase of nearly 9,000 tons, while in refined copper the output of 108,816 short tons was about 11,000 tons up. Deliveries in December amounted to 113,446 short tons, against 106,232 tons in November. Stocks at December 31 stood at 74,832 short tons, compared with 66,622 tons at the end of the previous month.